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IS 8270-6 (1983): Guide for preparation of diagrams, charts and tables for electrotechnology, Part 6: Unit wiring diagrams and tables [ETD 1: Basic Electrotechnical Standards]



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“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

GUIDE FOR PREPARATION OF
DIAGRAMS, CHARTS AND TABLES FOR
ELECTROTECHNOLOGY

PART 6 UNIT WIRING DIAGRAMS AND TABLES

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NEW DELHI 110002

Indian Standard

GUIDE FOR PREPARATION OF DIAGRAMS, CHARTS AND TABLES FOR ELECTROTECHNOLOGY

PART 6 UNIT WIRING DIAGRAMS AND TABLES

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Indian Standard

GUIDE FOR PREPARATION OF DIAGRAMS, CHARTS AND TABLES FOR ELECTROTECHNOLOGY

PART 6 UNIT WIRING DIAGRAMS AND TABLES

0. FOREWORD

0.1 This Indian Standard (Part 6) was adopted by the Indian Standards Institution on 27 may 1983, after the draft finalized by the Basic Electrotechnical Standards Sectional Committee had been approved by the Electrotechnical Division Council.

0.2 A number of standards have been published on graphical symbols for use on diagrams in the field of electrotechnology (*see* various parts of IS : 2032*). After having covered most of the needs for graphical symbols, with the exception of those for new fields of electrotechnology still under consideration, it has been found advisable to supplement the Indian Standards on graphical symbols with standards for the preparation of diagrams.

0.3 This standard includes definitions and classification of diagrams, charts and tables; guiding principles for use and combination of graphical symbols; guiding principles for preparation of diagrams; guiding principles for supplementing or replacing diagrams by charts and tables; item designation; etc.

0.4 This standard is being brought out in several parts as follows:

- Part 1 Definitions and classification
- Part 2 Item designations
- Part 3 General requirements for diagrams
- Part 4 Circuit diagrams
- Part 5 Interconnection diagrams and tables
- Part 6 Unit wiring diagrams and tables

*Graphical symbols used in electrotechnology (*issued in several parts*).

0.4.1 This standard shall therefore be read in conjunction with the other parts as they are all concerned with various aspects of drawing practices and provide additional guidance.

0.5 Unit wiring diagrams and tables provide information on the internal electric connections of a unit or assembly of units. They are intended primarily for manufacturing and maintenance purposes. Information on the external connections between units is usually not included, but references to the appropriate interconnection diagrams or tables may be provided.

Unit wiring diagrams and tables may supplement one another and both may also contain information from other documents, such as working drawings, circuits diagrams, parts lists, etc.

0.6 Some of the methods for the marking of conductors, given in IS : 5578-1970* are used in the figures in this standard. These figures, however, are examples only, and are not intended to be mandatory for the choice of a designation and marking method.

In these examples, item designations for components, devices and parts are shown in accordance with IS : 8270 (Part 2)-1976†. However, in accordance with that standard other designations may be used, provided they are explained.

0.7 In the preparation of this standard, assistance has been derived from IEC Pub 113-6 (1976) 'Diagrams, charts, tables Part 6 : Preparation of unit wiring diagrams and tables', issued by the International Electrotechnical Commission.

1. SCOPE

1.1 This standard (Part 6) lays down the guidelines for preparation of unit wiring diagrams and tables used in electrotechnology.

1.2 The representation of printed circuits is not included in this standard.

SECTION 1 UNIT WIRING DIAGRAMS

2. LAYOUT

2.1 Unit wiring diagrams are generally drawn in approximate topographical representation.

*Guide for marking of insulated conductors.

†Guide for preparation of diagrams, charts and tables for electrotechnology : Part 2 Item designation.

3. EQUIPMENT VIEWS

3.1 The view or views of equipment, that are required for a unit wiring diagram are those which will most clearly show the terminals or wiring sides of the component devices or parts as they are mounted in the equipment. In most instances, one view as seen from the wiring side of the items should be sufficient. This view will generally correspond to the view of the items as seen during wiring. More than one view may be required when the equipment is wired from both front and rear. Component devices or parts with more than one level of terminals may also require more than one view.

4. COMPONENTS, DEVICES AND PARTS

4.1 Unit wiring diagrams employ straight lines and simple outlines like squares, circles or rectangles to depict equipment items. Sometimes graphical symbols may be used. Mechanical details, such as the fastening for an item, should be shown only if this helps in the understanding of the diagram.

4.2 If items are located above each other at several levels, these items may be shown in the diagram as flipped, turned or moved in such a way that the terminals may be seen by the reader of the diagram. The method used shall be appropriately indicated.

4.2.1 For example, Fig. 1 shows a soldering terminal strip, the end of which is viewed in the equipment, flipped to the left by 90°. The long line on the right indicates the hinge of flipping.

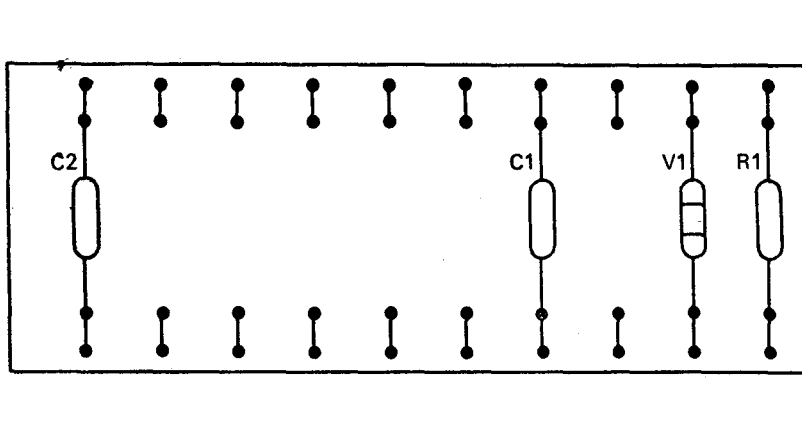


FIG. 1 SOLDERING TERMINAL STRIP

4.2.2 Another example is given in Fig. 2 which contains a note indicating that the movable part to the right of the long chain boundary line is wired from the front of the bay. This part is connected by means of a loop.

5. TERMINALS

5.1 Terminals may be represented by graphical symbols. In some cases, on the outline depicting a device, the terminal designation alone may be sufficient.

5.2 If a convention is used to distinguish between detachable and non-detachable connections, it shall be shown or referenced on the diagram.

6. WIRING

6.1 In simple cases, the connections between items may be depicted by individual lines, for example, *see* Fig. 3. The unit wiring diagram may show technical data for the conductors, such as type of wire and cross-sectional area.

6.2 It should show where conductors are to be twisted, shielded, separated from other conductors, etc. In the representation of a shielded conductor, the diagram should show whether the shield is to be isolated or connected and, in that case, a clear distinction should be made between the termination of the conductor and the shield.

6.3 Grouped conductors like cables, cable forms, etc, may be represented by a common line [*see* 4.3 of IS : 8270 (Part 3)-1977*]. If a unit contains several conductor groups (cables, cable forms, etc.), these must be properly distinguished from one another. In the equipment represented in Fig. 2, the individual conductors are identified by colours and are grouped in two cable forms, A and B. The reference figures where the lines representing individual conductors join those representing cable forms are provided to assist in the reading of the diagram.

6.4 Interrupted line technique in accordance with 4 of IS : 8270 (Part 3)-1977* may be used to clarify the diagram. Provision shall be made for the association of the broken lines (*see* the example given in Fig. 4). In this equipment, the independent marking system described in IS : 5578-1970† is used for the conductors.

*Guide for preparation of diagrams, charts and tables for electrotechnology : Part 3
General requirements for diagrams.

†Guide for marking of insulated conductors.

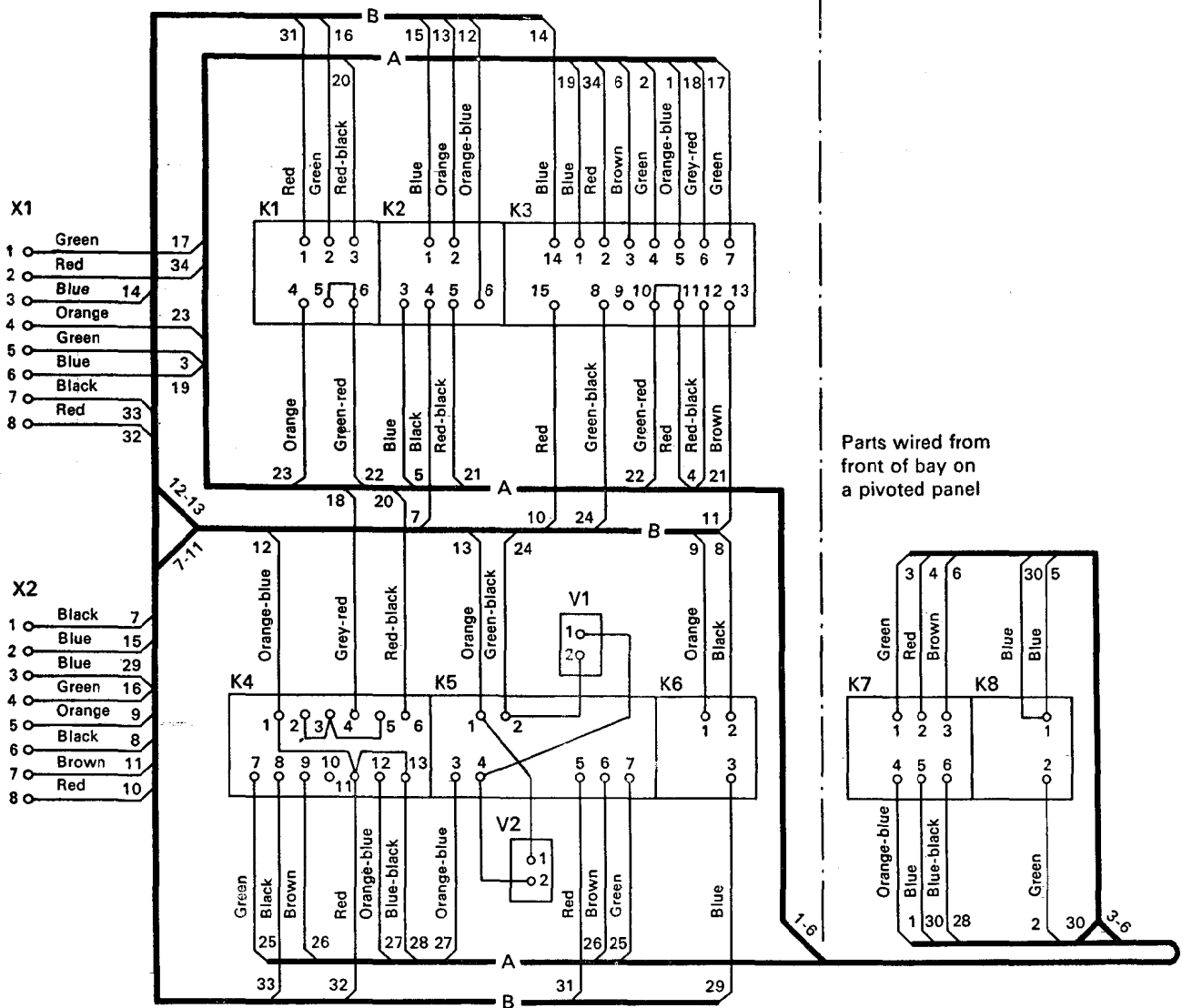


FIG. 2 GROUPED CONDUCTORS IN AN EQUIPMENT

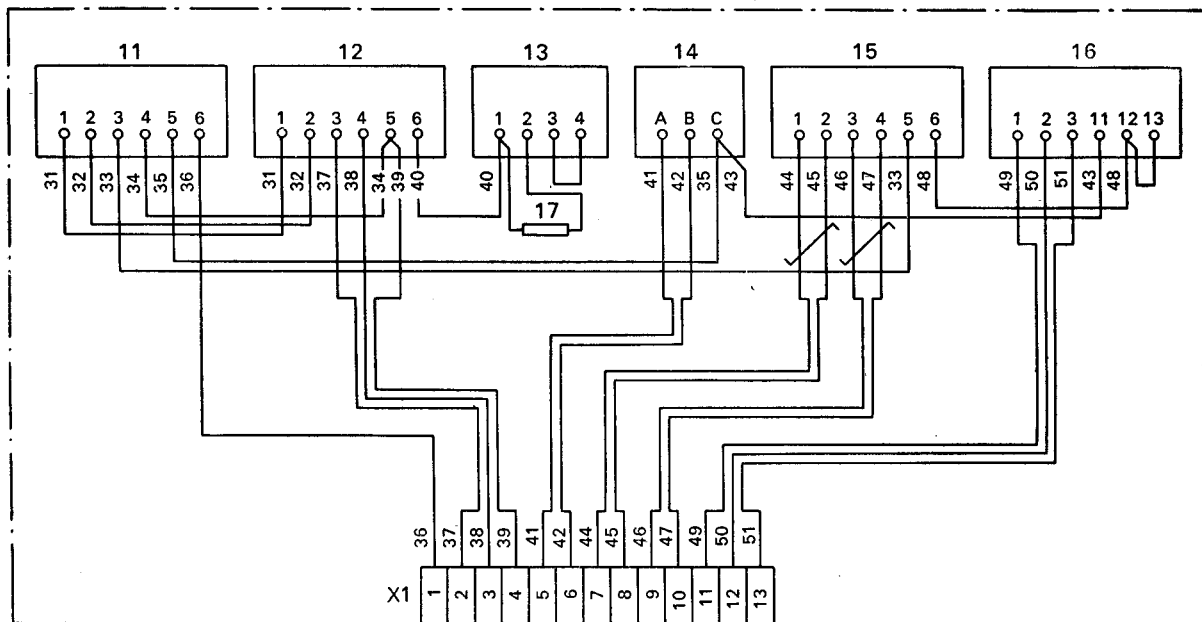


FIG. 3 CONNECTION BETWEEN ITEMS

IS : 8270 (Part-6) - 1983

SECTION 2 DESIGNATION

7. ITEMS

7.1 Item designations appearing on the wiring diagrams or tables shall be the same as those on the corresponding circuit diagrams and associated documents.

8. TERMINALS

8.1 Each point of termination should be identified by:

- a) a marking appearing on the actual item;
- b) a designation appearing in associated documentation; or
- c) an arbitrary designation explained in the wiring information.

The designation of terminals in a diagram may be omitted if no ambiguity arises.

9. CONDUCTORS

9.1 Lines representing conductors should be suitably identified, for example, by any marking appearing on the actual conductor or by a designation assigned in accordance with the appropriate Indian standards. Identification by colour may be employed.

10. CODE FOR THE REPRESENTATION OF CONDUCTOR COLOURS — (*Under consideration*)

SECTION 3 UNIT WIRING TABLES

11. GENERAL

11.0 The information given by unit wiring diagrams can conveniently be given by tabular listing. In many cases, a table is more satisfactory than a diagram. The detail of tabular arrangement will depend on the circumstances of each case.

Because many satisfactory variants are possible, no examples are shown in this standard.

11.1 Unit wiring tables may be supplemented by location diagrams.